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AT HARVARD COLLEGE
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TARACTES ASPER AND THE SYSTEMATIC RELATIONSHIPS OF THE STEINEGERIIDAE AND TRACHYBERYCIDAE

By Giles W. Mead and G. E. Maul

With One Plate

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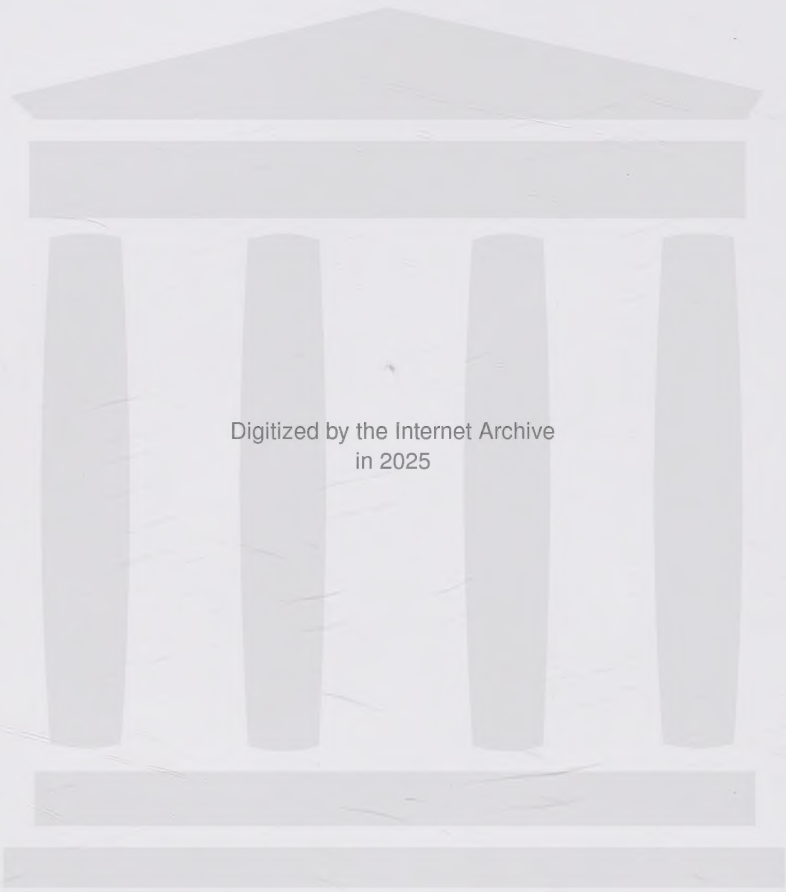

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No. 6 — Taractes asper *and the Systematic Relationships of the Steinegeriidae and Trachyberycidae*

By Giles W. Mead[1] and G. E. Maul[2]

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INTRODUCTION

In an earlier paper one of us reviewed the status of certain species of bramid fishes (Mead, 1957). Excluded from that account were several nominal species related to *Taractes longipinnis* which were so poorly known that a comparison of them with the more common *Taractes* was impossible. This study is concerned principally with three such forms: *Taractes asper* Lowe, 1843, *Steinegeria rubescens* Jordan and Evermann, 1887, and *Trachyberyx barretoi* Roule, 1929.

Our study has indicated that the genus *Taractes* contains species of two distinct types, one with a deep body, the other with a less deep one. Two subgenera are recognized for these types: *T.* (*Taractichthys,* new), and *T.* (*Taractes*) respectively. We have also concluded that *Taractes asper* is not the juvenile of *Taractes longipinnis* as has customarily been assumed, but is a valid species of *Taractes* (*Taractes*), the adult of which is un-

[1] Ichthyologist, United States Fish and Wildlife Service, U. S. National Museum, Washington, D. C.

[2] Curator, Museu Municipal do Funchal, Funchal, Madeira.

known. The series of specimens described by Maul from Madeira as *Trachyberyx barretoi* are considered identical with *Taractes* (*Taractes*) *asper*. Maul's fishes, which are questionably identified with Roule's type of *Trachyberyx barretoi* and on which Maul based the berycoid family *Trachyberycidae*, are not berycoids but bramids. We have also found that the juvenile fish described as *Steinegeria rubescens* (*Steinegeriidae*) is closely related to *Taractes* (*Taractes*) *asper*. An account of the relationships of these species and the nomenclatorial consequences of our classification follows below.

In addition to comparative bramid and berycoid specimens contained in the Museu Municipal do Funchal and the U. S. National Museum, our study material includes the following specimens:

The type of *Steinegeria rubescens*.

A juvenile *Steinegeria rubescens* from the Gulf of Mexico (United States Fish and Wildlife Service exploratory vessel *Oregon* station 1473: 24° 48′ N. Lat., 91° 40′ W. Long.; March 26, 1956; from the stomach of an *Alepisaurus ferox* which was caught on a tuna long-line).

An adult from the Gulf of Mexico about 200 miles south of Mississippi (caught on a tuna long-line by the commercial fishing vessel *Sirocco*).

An additional juvenile, tentatively referred to *T. rubescens*, from the Pacific off Upolu Point, Hawaii (taken by the U. S. Fish and Wildlife Service research vessel *Hugh M. Smith III*, April 17, 1950; from the stomach of a pelagic octopod, *Eledonella* sp., which in turn was taken from the stomach of an *Alepisaurus ferox*).

The series of Madeiran specimens which were discussed by Maul (1954:18) as *Trachyberyx barretoi* and additional juvenile specimens of the same species from Madeira.

We are indebted to the Curators of the Museum of Comparative Zoology, Harvard University, and the Natural History Museum, Stanford University, for making their specimens of bramid and berycoid fishes available to us. Several individuals have provided specimens or supplementary information, and we wish here to record our appreciation to Prof. Umberto d'Ancona, Istituto di Zoologia e Anatomia Comparata, Padova, Italy; Dr.

G. Belloc, Institut Océanographique, Monaco; and to Dr. Albert L. Tester, John W. Reintjes and Harvey R. Bullis, Jr., of the U. S. Fish and Wildlife Service.

Taractes

In their careful study of a western North Atlantic *Taractes*, Bigelow and Schroeder (1929) separated the species of *Taractes* from *Brama* on the basis of the number of scales in a longitudinal series. They included seven nominal species within the genus: *T. asper* Lowe, *longipinnis* (Lowe), *brevorti* (Poey), *raschi* (Esmark), *princeps* Johnson, *saussuri* (Lunel) and *steindachneri* (Döderlein). These species, and the two which were described subsequently (*T. platycephalus* Matsubara and *T. miltonis* Whitley), were later reviewed by Mead (1957). In both of these papers *T. asper* was considered a dubious species but retained as distinct from its congeners. The results of the two studies differ principally in the treatment of *T. princeps* Johnson, which Bigelow and Schroeder thought had best be considered distinct from *T. longipinnis*, and *T. raschi*. *T. asper* will be discussed more fully below, and the specific differences, if any, between *T. princeps* and *T. longipinnis* will not affect our present understanding of *Taractes*. *T. raschi* is treated here as a distinct species.

The great changes in form of vertical fins, type of scalation and the like during growth has been troublesome to those who have attempted taxonomic studies of the bramids. A feature which separates these nine species into two natural groups is the relative depth of the body, and correlated with it the dorsal profile of the head. This is recognized here as a subgeneric characteristic, although a test of its validity must await the capture of full developmental series of each species.

The type figures of *Taractes raschi* (see Smitt *et al.*, 1892-95, fig. 24; Mead, 1957, fig. 4) and *T. platycephalus* (Matsubara, 1936) show shallow-bodied forms with concave foreheads. Measurements taken from Esmark's figure of *T. raschi* show that the greatest depth of body is contained 2.4 times in standard length, 2.7 in fork length, and about 3.1 in total length. These ratios for *T. platycephalus* are: 2.3, 2.8 and 2.9. (We will note below that the adult *Taractes rubescens* is in this shallow-bodied group.

The comparable depths in standard, fork and total length are: 2.5, 2.7 and 3.1. Our analysis of *T. asper* also suggests that its adult should be placed here.) We propose the subgenus *Taractes* (*Taractes*) for these four species.

Differing from this group are the adult *Taractes* which are more frequently caught (for example, those reported by Bigelow and Schroeder, 1929; Fitch, 1953:546; Whitley, 1938:191; Fowler, 1956). In these the foreheads are convex and steeply inclined; the fins, although variable, are more strongly falcate; and the general form is somewhat rhomboidal. In the deep-bodied Atlantic specimen reported as *T. princeps* by Bigelow and Schroeder (1929) the maximum depth is contained 1.9 in standard length, 2.1 in fork length and about 2.6 in total length. These measurements on smaller Atlantic deep-bodied specimens are: 1.6-2.0, 1.8-2.1 and 1.8-2.6. Published figures of *T. saussuri* Lunel, *T. steindachneri* Döderlein and *T. miltonis* Whitley identify these species with the deep-bodied forms. Poey's description of *T. brevorti* also defines a deep-bodied species.

Fortunately, Johnson recorded standard length as well as "total" length for one of his specimens of *T. princeps*. The body depth is contained 1.9 and about 2.6 in these lengths respectively, thus establishing his species as a deep-bodied form. Lowe (1843:82) was less precise in his original account of *T. longipinnis,* for he says only that, "The example seen measured eighteen inches and a quarter in length, and was eight inches deep at the origin of the dorsal and anal fins," a ratio of 2.28. If he was referring to standard length, *T. longipinnis* would be among the shallow-bodied species distinct from *T. princeps* and allied to *T. raschi.* Nowhere in his 1843 paper does he define "length" and, since there are no figures, a more definite meaning cannot be deduced from his account of other species there described. A perusal of his "Fishes of Madeira" (1843-60), however, has convinced us that Lowe's "length" refers to a total or overall length, since the two terms are used interchangeably in that publication and the morphometric ratios of the fishes there described and figured are given in terms of a total, not a fork or standard, length. *Taractes longipinnis* can thus be placed among the deep-bodied species, for the ratio 2.3 is within the range of other deep-bodied forms but not within that of the rarer less-deep species.

Within this second subgenus of *Taractes, T.* (*Taractichthys*), we therefore include these named deep-bodied forms: *longipinnis, brevorti, princeps, saussuri, steindachneri* and *miltonis.*

We can turn now to the three named species which are the principal concern of this paper: *Taractes asper, Steinegeria rubescens* and *Trachyberyx barretoi.*

Taractes asper Lowe, 1843

Lowe based *T. asper* on a single "plain and sober-coloured little fish" from Madeira. One of us has searched the collections of the British Museum for this and other of Lowe's types, but could not find *T. asper.* Since we believe that this fish bears a close resemblance to those later described under the generic names *Steinegeria* and *Trachyberyx,* and since *T. asper* is the type species of *Taractes,* we quote here Lowe's original description of *Taractes* and *T. asper.* In the absence of a figure and of the type specimen, this description constitutes our entire knowledge of that species.

"Gen. *Taractes,* nob.

"*Char. Gen.* — *Corpus* ovatum compressum (ad finem pinnae dorsalis analisque abrupte in caudam contractum), squamis cycloideis retrorsum aculeato-umbonatis muricato-asperum. *Caput* squamosum; oculis magnis; rostro brevissimo simo; rictu magno subverticali; dentibus *Bramae* similibus subscobinatis recurvis, externis majoribus; palatinis vomereque armatis. *Operculum* simplex inerme. *Praeoperculum* basi eximie dentato s. subcalcarato; subopercule interoperculoque denticulatis.

"*Pinnae* malacopterygiae, s. omnes radiis mollibus. *Ventrales* subjugulares. *Pinna dorsalis analisque* unica conformis lata; *caudalis* simplex integra rotundata. *Membrana branchiostega* septem-radiata.

"*Squamae* magnae trapeziformes postice emarginatae cycloideae; umbone in aculeum recurvato-erectum producto.

"*Taractes asper.*

D. 5 + 28; A. 3 + 20; P. 17; V. 1 + 5; C. $\frac{4 + \text{VIII}}{3 + \text{VII}}$; M. B. 7;

Squamae corporis in serie longitudinali 43 fere.

"The generic name imposed at its first discovery on this particularly interesting, though plain and sober-coloured little fish, expresses the difficulty experienced in settling its relations of affinity, which are

> indeed so obscure and complicated, that but for the subsequent discovery of *Brama longipinnis*, with its similarly, though contrariwise, hooked scales, its true position, next to *Brama*, with analogies to many other families (e.g. *Zenidae, Caproidae, Scombridae*), must have remained in abeyance.''

Immediately above his account of *Taractes,* Lowe described a similar fish, *Brama longipinnis.* Later workers, for want of a better knowledge of *Taractes asper,* have considered this species to be a young stage of *T. longipinnis.* This practice is no longer

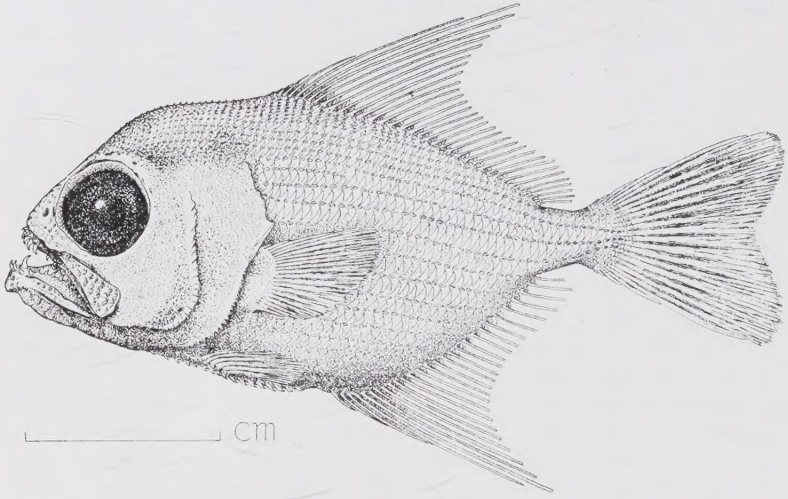

Figure 1. Juvenile *Taractes* (*Taractichthys*) *longipinnis,* about 30 mm. in standard length. (Museu Municipal specimen no. 345; drawn by G. E. Maul.)

appropriate. Mead (1957) has described a 74 mm. juvenile *Taractes longipinnis* (with which he considered *T. princeps* identical), and a 30 mm. fish which can best be referred to this species (Fig. 1) was collected by Maul at Madeira and is now in the Museu Municipal, Funchal. These juveniles, and the published descriptions of adults of various sizes (Barnard, 1948:374; Bigelow and Schroeder, 1929; Fitch, 1953:539; Whitley, 1938; etc.) differ in several aspects from Lowe's type description of *T. asper.* His fish was said to have a spine-bearing preoperculum,

uniformly broad dorsal and anal fins, and a simply rounded caudal fin. These are not attributes of the young of *Taractes longipinnis,* for the denticulations of the operculum and preoperculum of the young can hardly be called spines, both the dorsal and anal fins become falcate at a very small size, and the caudal fin changes from a simple fork in the young to the deeply concave, scombrid-like type of the adult. Nor is it likely that Lowe's *T. asper* is the young of one of the other bramid genera: *Brama, Collybus* or *Eumegistus.* We have seen the young of the first two of these and the juvenile *Brama leucotaenia* Fowler,

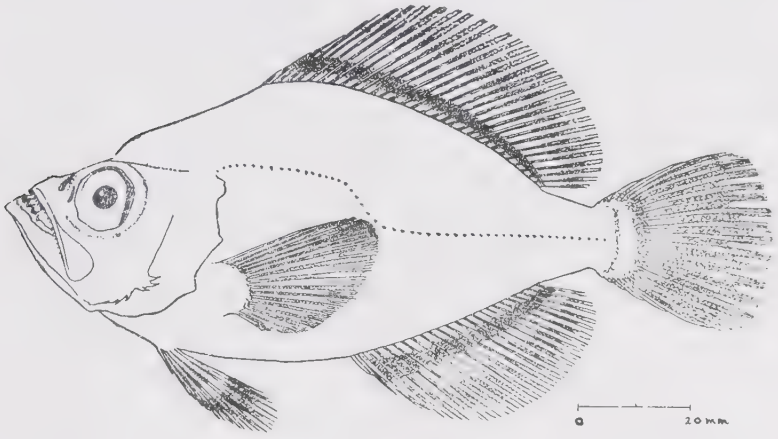

Figure 2. *Taractes* (*Taractes*) *asper,* about 110 mm. in standard length, from Madeira (from Maul, 1954:20).

which may represent the young of the third. On the other hand, Lowe's description of *T. asper* does agree well with the fishes later described from Madeira as *Trachyberyx barretoi* and from the Gulf of Mexico as *Steinegeria rubescens.* It differs from these principally in the number of scales in a lateral series (see Table 1) and in the presence of vomerine teeth. (Lunel, 1866, found the presence of vomerine teeth to be variable in some bramids, while Fowler (1936:652) suggested that they disappear with growth.) The counts of *Taractes asper* given by Lowe are com-

pared with those of our other material in Table 1. We have concluded that Lowe's *T. asper* is conspecific with Maul's Madeiran *Trachyberyx barretoi.*

Trachyberyx barretoi Roule, 1929

The type of *Trachyberyx barretoi* was caught off Madeira and described as a new genus and species of berycoid related to *Trachichtodes.* Subsequently a series of Madeiran specimens was referred to this species by Maul and formed the basis for the account of his new and monotypic family Trachyberycidae (Maul, 1954:18). *Trachyberyx barretoi* is discussed here because Maul's specimens are not berycoids but bramids of the genus *Taractes,* closely allied to and probably identical with Lowe's "plain and sober-coloured little" type of *Taractes asper.* However, we have not definitely included the genus *Trachyberyx* Roule in the synonymy of *Taractes* or his species *barretoi* in that of *asper* because we have not been able to examine Roule's holotype, which is in the Institut Océanographique, Monaco. The general configuration of the specimen given in Roule's account is similar to that of the specimens reported by Maul (1954) and of the type of *Steinegeria rubescens.* It differs from these in fin placement, scale spines and preopercular spines. Professor d'Ancona, who examined this type for us, has forwarded information which has helped to clarify the status of Roule's species and to correct some of the errors in his description.

Professor d'Ancona has recounted the ventral fin of Roule's type and found it to be composed of a spine and five rays. Roule reported a count of I-6, the only characteristic given in the original account by which *T. barretoi* could be allied with the berycoids. On the other hand, the type has nineteen principal caudal rays (d'Ancona, personal communication), a berycoid characteristic, as opposed to the caudal count of I-15-I in Maul's Madeiran series and in all other specimens of *Taractes* which we have seen. Roule's specimen also differs in the type of spination on the scales of the caudal peduncle, for those in the midlateral series of the caudal peduncle are not notably stronger than those adjacent to them, in contrast to both Maul's specimens and the

Gulf of Mexico *T. rubescens.* Professor d'Ancona has also redescribed the preopercular spines as "approximately so arranged as in Fig. 5 of Maul's (1954) paper, not in the way represented in Roule's picture (Bull. Inst. Océan. 546)." The preopercular spines are very distinctive in our Madeiran and Gulf of Mexico juveniles. In summary, we have not been able to determine to which order or genus the type of *Trachyberyx barretoi* should be referred but suspect that it may be a species of *Taractes.*

We have dissected one of the Madeiran specimens on which the Trachyberycidae was based and have found it to differ in several important respects from the original diagnoses of the Berycoidei provided by Starks (1904:602), Regan (1911:2) and Berg (1947:467). There seems to be no orbitosphenoid, and the interorbital septum is double, at least dorsally. The supplementary maxillary is small and the maxillary is not articulated with the vomer anteriorly. The exoccipitals are separate from one another and from the basioccipital. The basioccipital is concave; the center of the concavity is slightly above the center of the vertebra. The insertion of the actinosts of the pectoral fin are equally divided between the hypercoracoid and the hypocoracoid. There are 42 (41 + 1) vertebrae. The ventral fin is composed of a spine and five branched and segmented rays. The caudal count is I-15-I. This combination of characters removes the *Trachyberyx barretoi* of Maul from the berycoids as currently understood.

We believe that the *Trachyberyx barretoi* of Maul is identical with *Taractes asper* Lowe. The adult of this form is unknown. The young, however, is closely related to the Gulf of Mexico *T. rubescens,* the adult of which is shown in the Plate. By analogy with *T. rubescens,* we expect the adult of *T. asper* to be a shallow-bodied species similar to *T. rubescens* and *T. raschi.*

Steinegeria rubescens, Jordan and Evermann, 1887

Steinegeria rubescens (Figs. 3-4) was described as a new genus and species of bramid and was based on a specimen taken from the stomach of a red "grouper" caught in the Gulf of Mexico off Pensacola, Florida. This fish, in very poor condition, is now in the United States National Museum (US 37991). Subsequent to its first public description, Jordan and Evermann

(1896 :960) elevated it to family status as the Steinegeriidae, a family closely related to the Bramidae. No figure of *S. rubescens* has heretofore been published, and although the Steinegeriidae was retained as a family by Jordan and his co-authors (*e.g.* Jordan, Evermann and Clark 1930 :266), other writers, who have been unable to determine the proper position of *S. rubescens* from the description alone, have treated *Steinegeria* as a dubious genus of bramids.

Figure 3. Holotype of *Steinegeria rubescens* (*Taractes* (*Taractes*) *rubescens*), 96.5 mm. in standard length, from the Gulf of Mexico. (Drawn by Mildred H. Carrington.)

The very poor condition of the type specimen is a handicap. The cheek bones and fins are partially digested and some elements are missing altogether. The spined scales are present, but the enlarged spines which occur on the caudal peduncle are evident on one side only. The distinctive preopercular spines which are diagnostic of the Madeiran, Gulf of Mexico, and Hawaiian juveniles are absent from one preoperculum and are highly eroded on the other. The dorsal fin, said by Jordan and Evermann to be divided and thus of taxonomic merit, is composed of partially digested elements which bear indications that they were

once filamentous. Most of these elements are broken, three at their bases. (They are drawn accurately in Figure 3. Juveniles of *T. rubescens* may have a notched dorsal fin.) In addition to the several severe cuts and tears in the body wall, the fish is badly torn above the origin of the anal fin. Consequently our count of that fin as well as the measurements which include this point are of questionable accuracy. This is not a specimen from which we can draw general inferences regarding the population of which it was once a part. In spite of its condition,

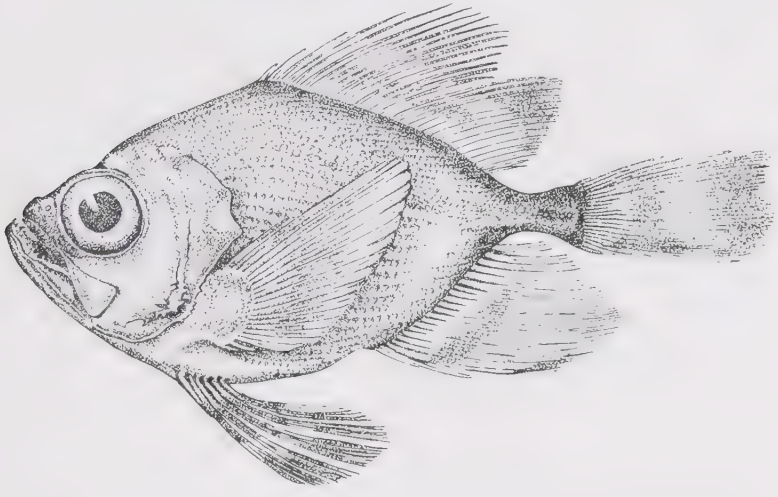

Figure 4. Juvenile *Taractes* (*Taractes*) *rubescens,* about 54 mm. in standard length, from the Gulf of Mexico. (Drawn by Mildred H. Carrington.)

however, we are convinced of its generic relationship to *Taractes.* A comparison of Figures 2 and 3 is offered in support of our view that *Steinegeria* is synonymous with *Taractes* as represented by its type species, *T. asper.*

We have referred two additional Gulf of Mexico specimens to *Taractes rubescens* — a 54 mm. juvenile and a large adult (Fig. 4, and Plate). The adult is particularly instructive, for if we are correct in considering it to be *T. rubescens,* a comparison is pos-

sible between the juvenile and the adult of this species, and between *T. rubescens* and other related species described from adult material. We believe that the caudal fin does indeed change from the rounded form which characterizes the juvenile to the emarginate type of the adult. Such a change is not out of accord with the development of the caudal fin in *T. longipinnis* (Fig. 1; Mead, 1957, Fig. 3). The development of falcate dorsal and anal fins and an increase in the number of branched rays in these fins continues beyond a fish length of 150 mm. and, as should be expected, the preopercular spines characteristic of juvenile *T.*

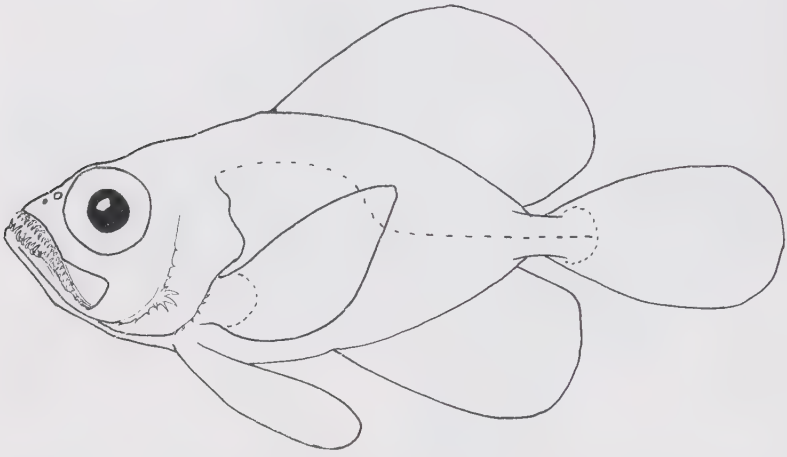

Figure 5. Juvenile *Taractes* (*Taractes*) *asper,* 56.5 mm. in standard length, from Madeira. (Drawn by Mildred H. Carrington.)

asper and *T. rubescens* become overgrown. It is of particular interest that another characteristic of great diagnostic value in the young, the enlarged scale spines on the caudal peduncle, is not a juvenile character but one which persists in the adult. The strong single keel which these scales form on each side of the caudal peduncle distinguishes adult *T. rubescens* from every known adult bramid specimen heretofore reported and vindicates our use of that character for the separation of the Madeiran juveniles of *T. asper* and *T. longipinnis.*

The juvenile of *T. rubescens* is quite distinct from the young Madeiran *T. asper*. The more important differences are included in our key (p. 410). The 29 mm. juvenile from off Hawaii, which is in the collection of the Pacific Oceanic Fishery Investigations, Honolulu (Fig. 6), has been compared with our 54 mm. juvenile from the Gulf of Mexico and a 30 mm. one from Madeira. It is

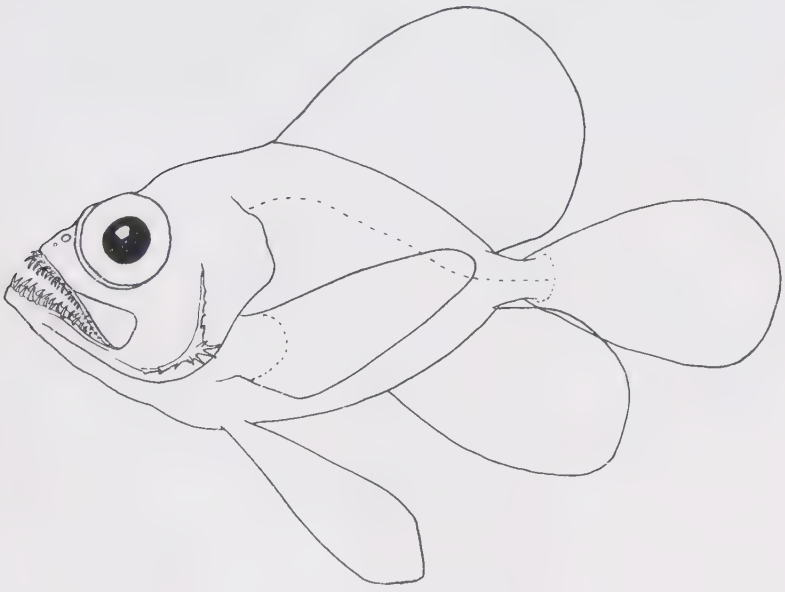

Figure 6. Juvenile *Taractes* (*Taractes*) *rubescens*, 27.5 mm. in standard length, from Hawaii. (Drawn by Mildred H. Carrington.)

similar in most respects to the Gulf specimen. Although there is reason to suspect that the Gulf of Mexico and Pacific populations are different, we are deterred from a full comparison because of the great changes known to accompany the growth of most bramid fishes, and our lack of a western Atlantic specimen of similar size. We will consider the Hawaiian juvenile conspecific with the Gulf of Mexico species until a larger Pacific specimen can be examined.

NOMENCLATURE AND CLASSIFICATION

The recognition of *Taractes asper* as a distinct species, and of *T. asper* and the species related to it as a natural group subgenerically distinct from *T. longipinnis* and its allies, presents nomenclatorial difficulties. Most authors have applied the generic name *Taractes* to the more widely known species related to *T. longipinnis* (*longipinnis, princeps, saussuri, brevorti, steindachneri, platycephalus* and *miltonis*). We believe that *T. asper* is not a young *T. longipinnis* but a fish generically distinct from it. Unfortunately *T. asper* is the type species, and should we

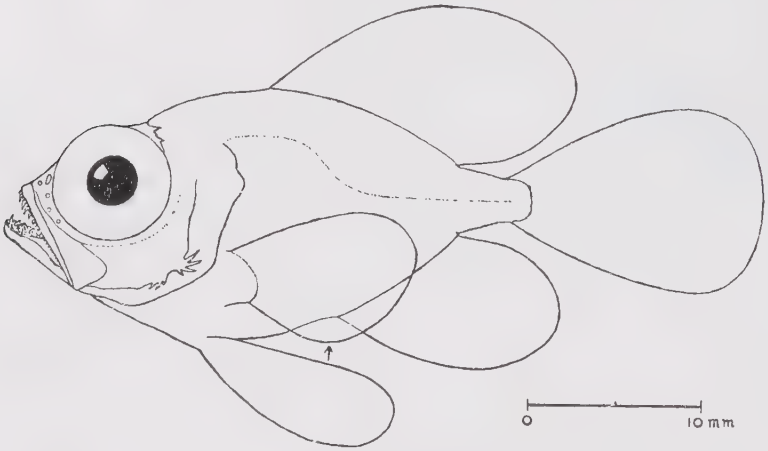

Figure 7. Juvenile *Taractes* (*Taractes*) *asper*, 30 mm. in standard length, from Madeira. (From Maul, 1954:21.)

restrict *Taractes* to its type species, *Steinegeria rubescens*, *Taractes raschi* and *T. platycephalus*, a new generic name would be needed for the commoner forms of the *longipinnis* group. We would not hesitate to propose such a change were our knowledge of Lowe's type specimen more complete or the possibility of its rediscovery more remote. We do not care to take this action without more complete information about that specimen and have consequently chosen to divide *Taractes* into two subgenera:

Taractes, with *T. asper* Lowe as its type species, and *Taractichthys* Mead and Maul, new, with *Brama longipinnis* Lowe as its type species. This compromise fails to recognize nomenclatorially the great differences between these two groups of species; the subgenus is used here as a nomenclatorial convenience as well as an expression of phyletic relationship. It does, however, express the close relationship between species formerly classified in widely separated groups and retains for common current use a widely-used generic name. Should our conclusions be confirmed on the rediscovery of Lowe's type, a phylogenetically more realistic classification can be established. The genera and subgenera of Bramidae (exclusive of Pteraclidae), the species of *Taractes* and the principal synonyms of each are provisionally listed below:

BRAMIDAE

(Bramidae + Steinegeriidae Jordan and Evermann, 1896, + Trachyberycidae Maul, 1954)

Genus Brama

Brama Bloch and Schneider, 1801:98. Type species (subsequent designation by Bory de St. Vincent, 1823 (3): 260): *Sparus raii* Bloch, 1791 (5):95.

Generic synonyms:

Lepidotus Asso y del Rio, 1801:38. Type species (monotypy): *Lepidotus catalonicus* Asso, *loc. cit.*

Lepodus Rafinesque, 1810:53. Type species (monotypy): *Lepodus saragus* Rafinesque, *loc. cit.*

Tylometopon Bleeker, 1873:133. Type species *Brama dussumieri* Cuvier and Valenciennes, 1831:294.

Amblytoxotes Bleeker, 1876:311. Type species (monotypy): *Toxotes squamosus* Hutton, 1875:313; 1876:210 (See Weber and de Beaufort, 1936:195).

Genus Eumegistus

Eumegistus Jordan and Jordan, 1922:35. Type species (monotypy): *Eumegistus illustris* Jordan and Jordan, *loc. cit.*, p. 36.

Genus Collybus

Collybus Snyder, 1904:525. Type species (monotypy): *Collybus drachme* Snyder, *loc. cit.*

Genus Taractes

Taractes Lowe, 1843:82. Type species (monotypy): *Taractes asper* Lowe, *loc. cit.*

Generic synonyms:

Argo Döderlein, in Steindachner and Döderlein, 1883:34, pl. 7. Type species (monotypy) *Argo steindachneri* Döderlein, *loc. cit.*

Steinegeria Jordan and Evermann, 1887:467. Type species (monotypy): *Steinegeria rubescens* Jordan and Evermann, *loc. cit.*

Subgenus *Taractes* Lowe, 1843:82. Type species (monotypy): *Taractes asper* Lowe, *loc. cit.* (Madeira).

Species:

Taractes (*Taractes*) *asper* Lowe

Taractes asper Lowe, *loc. cit.* Günther, 1860:410 (from Lowe).

Trachyberyx barretoi (? non-Roule, 1929) Maul, 1954:18 (juveniles; Madeira).

Taractes (*Taractes*) *raschi* (Esmark)

Brama raschi Esmark, 1862:238 (Norway); 1868:521. Collin, 1874:418. Lilljeborg, 1884-91:310.

Taractes raschi Bigelow and Schroeder, 1929. Mead, 1957:56, pl. 2:4. (from Esmark), 1862, and Smitt *et al.*, 1892-95).

Brama longipinnis (non-Lowe). Smitt *et al.*, 1892-95:80, fig. 24 (part, after Esmark, 1862).

Taractes longipinnis (non-Lowe). Fowler, 1936 (2):653, fig. 293 (part?; figure stated to be after Lowe, who did not publish a figure; probably from Smitt *et al.* after Esmark).

Taractes (*Taractes*) *rubescens* (Jordan and Evermann)

Steinegeria rubescens Jordan and Evermann, 1887:467 (Gulf of Mexico)

Taractes (*Taractes*) *platycephalus* Matsubara

Taractes platycephalus Matsubara, 1936:297, fig. 1 (Japan). Mead, 1957:56 (compared with *T. raschi*).

Subgenus *Taractichthys* Mead and Maul, new. Type species: *Brama longipinnis* Lowe, 1843:82.

Species:

Taractes (*Taractichthys*) *longipinnis* (Lowe).

Brama longipinnis Lowe, 1843:82 (Madeira). Günther, 1860:410 (from Lowe, 1843).

Taractes longipinnis. Steindachner and Döderlein, 1884:174 (on *Argo Steindachneri* Döderlein; Japan). Barnard, 1927:595 (South African adult specimen); 1948:374

(disc. of several S. African specimens). Mead, 1957:52, pl. 1, fig. 1 (Gulf of Mexico adult and juvenile).

Taractes asper (non-Lowe). ?Hilgendorf, 1888:208 (specimen from the Azores said to be deposited in the Museum zu Ponta Delgada).

Taractes princeps Johnson, 1863:36 (Madeira). Bigelow and Schroeder, 1929 (large individual from Nova Scotia). Fitch, 1953:546 ("*Taractes* sp.," adult from California). Fowler, 1956:1 (adult from off New Jersey). Springer and Bullis, 1956:73 (several adult specimens from the Gulf of Mexico).

Argo steindachneri Döderlein, *in* Steindachner and Döderlein, 1883; pl. 7 (Japan).

Taractes steindachneri Jordan, Tanaka and Snyder, 1913:134 (Japan, listed). Matsubara, 1936:297 (compared with *T. platycephalus*).

Taractes miltonis Whitley, 1938:191, pl. 19 (Australia). Mead, 1957:57 (compared with Atlantic *T. longipinnis* Lowe).

Taractes (*Taractichthys*) *brevorti* (Poey)

Brama brevorti Poey, 1861 (2):206 (Cuba)

Taractes (*Taractichthys*) *saussuri* (Lunel)

Brama saussuri Lunel, 1866:185, pl. 2 (Cuba)

It must be understood that these species are among the poorest known of all fishes. Most species are known from very few specimens or from the types alone, and we have had access to few of these. The bramids are renowned for the remarkable changes in body form which take place with growth, and because of this, gross morphological characters which are of unqualified value in the taxonomic study of other groups of fishes are suspect when used in bramid classification. Among these are the presence or absence of a lateral line, shape of vertical fins, presence or absence of vomerine teeth, degree of spination on the scales of the young, and amount of branching in dorsal and anal rays. Some of these questionable characters are used, in the synopsis which follows, to distinguish between species which are known only from the type specimens (e.g. *T.* (*Taractichthys*) *saussuri cf. brevorti; T.* (*Taractes*) *platycephalus cf. raschi*), for we have not been able to examine the type material. We think that the characters used for the separation of the two subgenera and for the species of *Taractes* (*Taractes*) will prove to be valid. In any

event, the synopsis below, based as it is on very few specimens, should be considered tentative.

a. Body deep, its greatest depth less than 2.2 in standard length. Forehead high, convex and steeply inclined.
. . . . . subgenus *Taractichthys*

b. Caudal fin biconcave.

c. Central caudal fin rays extending beyond caudal lobes.
. . . . . *T.* (*Taractichthys*) *saussuri*

cc. Central caudal fin rays not extending as far as tips of caudal lobes.
. . . . . *T.* (*Taractichthys*) *brevorti*

bb. Caudal fin emarginate.
. . . . . *T.* (*Taractichthys*) *longipinnis*

aa. Body less deep, its greatest depth more than 2.2 in standard length. Dorsal profile of snout straight or concave.
. . . . . subgenus *Taractes*

d. Three or four consecutive scales of the midlateral series on the caudal peduncle enlarged and laterally produced to form, in the adult, a strong hard median keel on each side of the caudal peduncle.

e. (Juveniles) Anal fin 23 to 25, the fin originating on a vertical with the seventh to the eleventh dorsal ray. Anterior arch of the lateral line turning abruptly downward under about the eleventh dorsal ray and reaching a midlateral point below the fourteenth. The series of spines on the midlateral scales of the caudal peduncle, which are notably larger than those above and below this series, decrease gradually in length anteriorly. Least depth of caudal peduncle, in juvenile, about ten per cent of standard length. No scaleless area above and behind eye.
. . . . . *Taractes* (*Taractes*) *asper*

ee. (Juveniles) Anal fin 20 to 22, the fin originating on a vertical with the fourteenth to the nineteenth dorsal ray. Anterior arch of the lateral line curving evenly from its origin to a point on the midlateral series of scales below the twentieth dorsal ray. The series of spines on four consecutive midlateral scales of the caudal peduncle are notably and abruptly larger than those immediately anterior to them in this series as well as those immediately above and below them on the caudal peduncle. Least depth of caudal peduncle, in juvenile, about eight per cent of standard length. A scaleless area, about one-third the diameter of the eye, on body above and behind the eye and

separated from the eye by about seven rows of scales. (Western Atlantic and mid-Pacific)

.....*Taractes* (*Taractes*) *rubescens*

dd. Scales of midlateral series on caudal peduncle not enlarged; the adult without a midlateral keel on the peduncle.

f. Vomer toothed.

.....*T.* (*Taractes*) *raschi*

ff. Vomer toothless.

.....*T.* (*Taractes*) *platycephalus*

SUMMARY

A study of a series of specimens from Madeira and the Gulf of Mexico and a comparison of this series with the nominal species of large-scaled bramids (*Taractes*) has led to the inclusion of the genus *Steinegeria* within *Taractes* and the families Steinegeriidae of Jordan and Evermann and Trachyberycidae of Maul within the Bramidae. The species of *Taractes* are divisible into shallow-bodied and deep-bodied forms, and the subgenus *Taractichthys* is proposed for the latter. *Taractes asper*, the type of which was inadequately described, subsequently lost and never illustrated, is applied to a series of Madeiran specimens formerly referred to *Trachyberyx barretoi*. Allied to this series are two juveniles and an adult from the Gulf of Mexico; these are referred to *Taractes* (*Taractes*) *rubescens*, the *Steinegeria rubescens* of Jordan and Evermann. A synopsis of *Taractes* and an enumeration of the species and principal synonyms are provided.

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	Adult of *Taractes* (*Taractes*) *rubescens* from Gulf of Mexico	Juvenile of *Taractes* (*Taractes*) *rubescens* from Gulf of Mexico (type of *Steinegeria rubescens*)	Juvenile of *Taractes* (*Taractes*) *rubescens* from Gulf of Mexico	Juvenile of *Taractes* (*Taractes*) *rubescens* from off Hawaii	Juvenile of *Taractes* (*Taractes*) *asper* from off Madeira	Juvenile of *Taractes* (*Taractes*) *asper* from off Madeira	Type of *Trachyberyx barretoi* from Roule, 1929:4 (fig.)	Type of *Taractes asper*, from Lowe, 1843:82
Standard length (mm.)	635.0	96.5	54.0	27.5	56.5	113.5	153.0	"Small"
Measurements, in per cent of standard length								
Length of head	30.5	39.4	41.7	49.4	40.0	—	33.7	—
Depth of body at origin of dorsal fin	40.1	50.8	49.1	54.5	45.3	48.0	39.5	—
Least depth of caudal peduncle	6.3	9.3	8.1	9.5	10.0	8.8	9.7	—
Horizontal diam. of eye	6.5	11.9	14.8	18.5	15.9	11.5	11.2	—
Snout to origin of dorsal fin	42.8	47.2	49.1	49.8	46.2	43.6	41.5	—
Snout to origin of anal fin	60.6	—	65.7	71.3	61.9	67.0	57.7	—
Snout to origin of pectoral fin	31.6	37.8	42.6	42.5	37.3	36.6	35.7	—
Length of pectoral fin	37.8	—	38.9	45.8	34.7	—	26.0	—
Length of ventral fin	12.8	27.5	33.3	47.6	36.3	—	22.9	—
Length of longest dorsal ray	27.4	26.9	36.1	44.4	32.7	—	19.4	—
Length of longest anal ray	—	24.9	31.5	44.4	26.5	24.2	21.3	—
Length of mid-caudal ray	9.6	22.3	31.5	43.6	34.5	—	—	—

	Adult of *Taractes* (*Taractes*) *rubescens* from Gulf of Mexico	Juvenile of *Taractes* (*Taractes*) *rubescens* from Gulf of Mexico (type of *Steindachneria rubescens*)	Juvenile of *Taractes* (*Taractes*) *rubescens* from Gulf of Mexico	Juvenile of *Taractes* (*Taractes*) *rubescens* from off Hawaii	Juvenile of *Taractes* (*Taractes*) *asper* from off Madeira	Juvenile of *Taractes* (*Taractes*) *asper* from off Madeira	Type of *Trachyberyx barretoi* from Roule, 1929:4 (fig.)	Type of *Taractes asper*, from Lowe, 1843:82
Counts:								
Dorsal fin	31	29½	30½	31½	32½	32	32	33
Anal fin	20½	21½	21½	21	23½	25	25	23
Pectoral fin	20	21	20	21	18	—	20	17
Ventral fin	I-5	I-5	I-5	I-5	I-5	I-5	I-5	I-5
Caudal fin	I-15-I	I-15-I	I-15-I	I-15-I	I-15-I	I-15-I	"19"	4 + VIII 3 + VII
Gill rakers	2+8	2+8	2+9	2+7	2+7	2+7	—	—
Scales in median longitudinal series	49	—	52	48	49	—	49	43[3]
Vertebrae (incl. hypural)	42	42	—	—	—	42	—	—

TABLE 1 — Proportional measurements and counts taken from an adult and three juvenile specimens of *Taractes* (*Taractes*) *rubescens* from the Gulf of Mexico and off Hawaii, two juveniles of *Taractes* (*Taractes*) *asper* from off Madeira, the type specimen of *Trachyberyx barretoi* (from Roule) and that of *Taractes asper* (from Lowe)

[3] If Lowe excluded from his count the scales on the caudal peduncle which merge to form a keel, his enumeration of the scales in a longitudinal series is in accord with our counts of other juvenile Madeiran specimens.

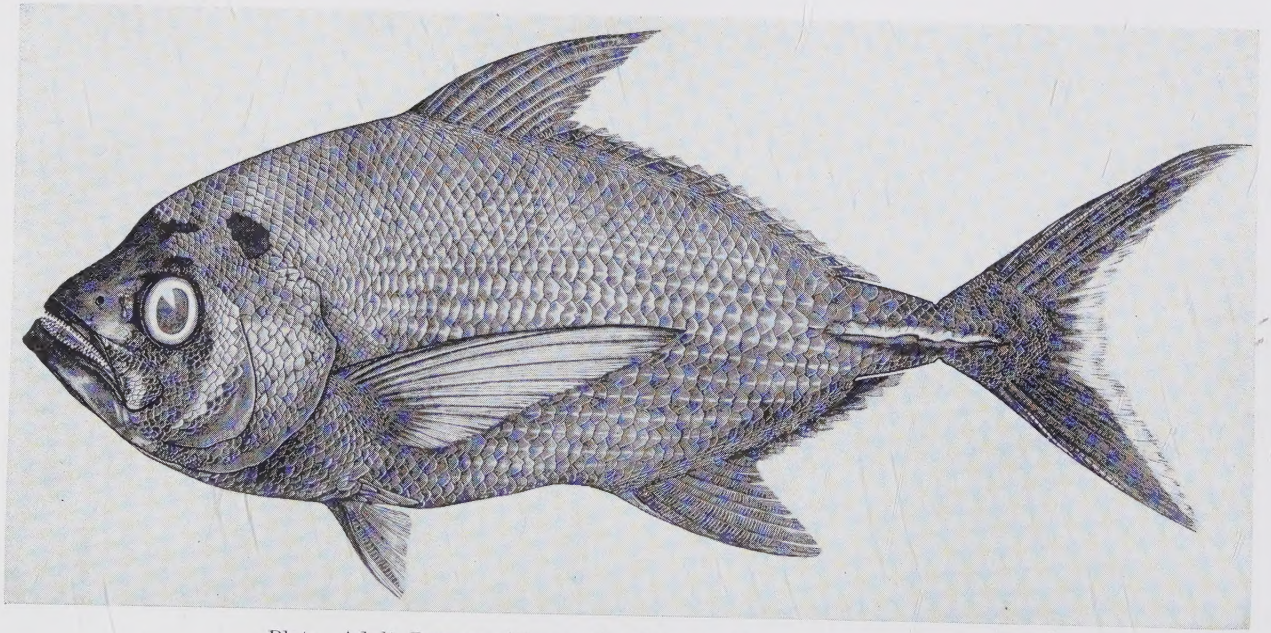

Plate. Adult *Taractes (Taractes) rubescens*, 635 mm. in standard length, from the Gulf of Mexico. (Drawn by Mildred H. Carrington.)